

Claims:

1. A cellular composition comprising one or more cells having a property characteristic of a neural stem cell and wherein said neural stem cell is capable of long term culture.
2. A cellular composition according to claim 1 wherein the neural stem cell has a property characteristic of a foetal neural stem cell.
3. A cellular composition according to claim 1 or 2 wherein the neural stem cell is characterised by an ability to grow indefinitely in tissue culture without undergoing transformation and to retain a degree of developmental plasticity.
4. A cellular composition according to any one of claims 1 to 3 wherein the neural stem cells are identified by markers found on neural stem cells including nestin and vimentin.
5. A method of preparing a cellular composition comprising one or more cells having a property characteristic of a neural stem cell wherein said neural stem cell is capable of long term culture, said method comprising:
 - obtaining a source of neural stem cells;
 - preparing a suspension of cells from the source;
 - contacting the suspension of cells with a suitable medium to maintain the neural stem cells in a cell culture; and
 - culturing the cells including passaging and propagation of the cells.
6. A method according to claim 5 wherein the source of the neural stem cell is a foetus differentiated at a stage after the embryonic stage.
7. A method according to claim 8 wherein the source of the neural stem cell is a head or spinal cord of the foetus.

8. A method according to any one of claims 5 to 7 wherein the suitable medium includes at least one lipid and at least one mitogenic factor.

9. A method according to claim 8 wherein the lipid is selected from the group including cholesterol, triglycerides or phospholipids or a combination thereof.

10. A method according to claim 8 or 9 wherein the mitogenic factor is selected from the group including bFGF, EGF, PDGF or a combination of EGF and bFGF.

11. A method according to claim 10 wherein the EGF is in the range of 2 to 20 ng/ml.

12. A method according to claim 11 wherein the bFGF is in the range of 2 to 20 μ g/ml .

13. A method according to any one of claims 8 to 12 wherein a chemically defined lipid concentrate is present in a ratio of 1:100.

14. A method according to any one of claims 8 to 13 wherein the media further includes a cell survival factor.

15. A method according to claim 14 wherein the cell survival factor is selected from the group including transferrin, insulin, growth factors including EGF, bFGF (FGF-2) or PDGF, lipids and selenium.

16. A method according to any one of claims 5 to 15 wherein the passaging and propagation of the cells is conducted when the cells bud from the cell culture.

17. A cellular composition prepared by the method according to any one of claims 5 to 16.

18. A cellular composition according to claim 17 wherein the composition comprises a substantially homogeneous population of cells having a property characteristic of a neural stem cell.

5 19. An isolated neural stem cell prepared from a cellular composition according to any one of claims 1 to 4 , 17 or 18.

20. A genetically modified neural stem cell, prepared by introducing into or deleting or modifying a gene from a neural stem cell according to claim 19.

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21. A method of preparing a genetically modified animal, said method comprising introducing a neural stem cell according to claim 19 or 20 into an oocyte or embryo and allowing the resulting embryo to mature to a foetus or animal.

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22. A method of producing an animal, said method comprising introducing a continuously growing donor cell nucleus from a continuously growing donor cell into an oocyte or embryo and allowing the resulting embryo to mature and to preferably develop to a foetus or animal.

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23. A method according to claim 22 wherein the donor cell is a continuously growing somatic cell.

24. A method according to claim 23 wherein the donor cell is a genetically
25 modified somatic cell and wherein said genetic modification includes destroying, modifying or deleting a gene from the cell.

25. A method according to claim 22 wherein the donor cell is a neural stem
cell according to claim 19 or 20.

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26. A method according to claim 22 wherein the donor cell is a TERT cell.

27. A method according to claim 26 wherein the TERT cell is a genetically modified TERT cell and wherein said genetic modification includes destroying, modifying or deleting a gene.
- 5 28. An embryo produced by the method according to any one of claims 22 to 27.
29. A method of producing a cell line from an embryo to produce cloned cells of an embryo, said method comprising
- 10 obtaining an embryo according to claim 28;
culturing the embryo to an advanced cleavage stage embryo;
separating and cloning the cleaved cells of the embryo; and
optionally culturing the cloned cells.
- 15 30. A cell line prepared by the method according to claim 29.
31. An animal prepared by the method according to any one of claims 22 to 27.
- 20 32. An animal prepared from an embryo according to claim 28.
33. A cell culture medium suitable for culturing neural stem cells in a long term culture comprising at least one lipid and at least one mitogenic factor.
- 25 34. A medium according to claim 33 wherein the lipid is selected from the group including cholesterol, triglycerides or phospholipids or a combination thereof.
- 30 35. A medium according to claim 33 or 34 wherein the mitogenic factor is selected from the group including bFGF, EGF, PDGF or a combination of EGF and bFGF.
36. A medium according to claim 35 wherein the EGF is in the range of 2 to 20 ng/ml.

37. A medium according to claim 35 wherein the bFGF is in the range of 2 to 20 µg/ml .

5 38. A medium according to any one of claims 33 to 37 wherein a chemically defined lipid concentrate is present in a ratio of 1:100.

39. A medium according to any one of claims 33 to 38 wherein the media further includes a cell survival factor.

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40. A medium according to claim 39 wherein the cell survival factor is selected from the group including transferrin, insulin, growth factors including EGF, bFGF (FGF-2) or PDGF, lipids and selenium.

15 41. A method of culturing neural stem cells said method comprising culturing the cells in the presence of at least one lipid and at least one mitogenic factor.

42. A method of culturing neural stem cells said method comprising culturing the cells in the presence of a culture medium according to any one of claims 33
20 to 40.

43. A method of treating a neurological disorder, said method comprising introducing a neural stem cell according to claim 19 into a host animal to correct the disorder wherein the neural stem cell is capable of replacing neural cells
25 affected by the neurological disorder.

44. A method according to claim 43 wherein said neurological disorder is Parkinsons Disease.